

Python Function Exercises

1. Area of a circle is calculated as follows: **area** = $\pi \times r \times r$ and **perimeter** = $2 \times \pi \times r$. Write a function that calculates **area_of_circle** and **perimeter_of_circle**.
2. Write a function called **add_all_nums** which takes arbitrary number of arguments and sums all the arguments. Check if all the list items are number types. If not, provide reasonable feedback.
3. Temperature in °C can be converted to °F using this formula: $^{\circ}\text{F} = (^{\circ}\text{C} \times 9/5) + 32$. Write a function which converts °C to °F, **convert_celsius_2_fahrenheit**.
4. Write a function called **check_season**, it takes a month parameter and returns the season: Autumn, Winter, Spring, or Summer.
5. Write a function called **calculate_slope** which returns the slope of a linear equation.
6. Quadratic equation is calculated as follows: $ax^2 + bx + c = 0$. Write a function which calculates the solution set of a quadratic equation, **solve_quadratic_eqn**.
7. Declare a function named **print_list**. It takes a list as a parameter and prints out each element of the list.
8. Declare a function named **reverse_list**. It takes an array as a parameter and returns the reverse of the array (use loops).

```
print(reverse_list([1, 2, 3, 4, 5]))
#[5, 4, 3, 2, 1]
print(reverse_list(["A", "B", "C"]))
#["C", "B", "A"]
```

9. Declare a function named **capitalize_list_items**. It takes a list as a parameter and returns a capitalized list of items.
10. Declare a function named **add_item**. It takes a list and an item as parameters. It returns a list with the item added at the end.

```
food_staff = ['Potato', 'Tomato', 'Mango', 'Milk']
print(add_item(food_staff, 'Fungi')) # ['Potato', 'Tomato', 'Mango', 'Milk', 'Fungi']
numbers = [2, 3, 7, 9]
print(add_item(numbers, 5)) # [2, 3, 7, 9, 5]
```

11. Declare a function named **remove_item**. It takes a list and an item as parameters. It returns a list with the item removed from it.

```
food_staff = ['Potato', 'Tomato', 'Mango', 'Milk']
print(remove_item(food_staff, 'Mango')) # ['Potato', 'Tomato', 'Milk']
numbers = [2, 3, 7, 9]
print(remove_item(numbers, 3)) # [2, 7, 9]
```

12. Declare a function named **sum_of_numbers**. It takes a number parameter and adds all the numbers in that range.

```
print(sum_of_numbers(5)) # 15
print(sum_of_numbers(10)) # 55
print(sum_of_numbers(100)) # 5050
```

13. Declare a function named **sum_of_odds**. It takes a number parameter and adds all the odd numbers in that range.
14. Declare a function named **sum_of_even**. It takes a number parameter and adds all the even numbers in that range.
15. Declare a function named **evens_and_odds**. It takes a positive integer as a parameter and counts the number of evens and odds in the number.

```
print(evens_and_odds(100))  
# The number of odds is 50.  
# The number of evens is 51.
```

16. Call your function **factorial**, it takes a whole number as a parameter and returns its factorial.
17. Call your function **is_empty**, it takes a parameter and checks if it is empty or not.
18. Write a different function which take lists. They should **calculate_mean**, **calculate_median**, **calculate_mode**, **calculate_range**, **calculate_variance**, and **calculate_std** (standard deviation).